People's concepts on diarrhea and dehydration in Nicaragua: the difficulty of the intercultural dialogue

Conceitos da população sobre a diarréia e a desidratação na Nicarágua: a dificuldade do diálogo intercultural

María Luisa Vázquez [1]
Mario Mosquera [2]
Axel Kroeger [3]

[1] CHC Consultoria i Gestió, S.A. Avda. Tibidabo 21, 08022 Barcelona, Spain. E-mail: mlvazquez@chccig.com
[2] Universidad del Norte, Barranquilla, Colombia
[3] International Health Division. Liverpool School of Tropical Medicine, United Kingdom

Abstract

Objectives: to analyse people's concepts and health seeking behavior relating to diarrhea and dehydration and its implications to improve health services practice.

Methods: individual and group interviews were conducted in two municipalities in the North of Nicaragua, with mothers, other community members, traditional healers and basic health personnel. A household interview survey in a random sample of 1.924 families with under-fives was carried out in three departments.

Results: people can easily identify diarrhea, as a disease in itself or as a symptom of several folk diseases. The popular construction of the causes of diarrhea is complex, with a mixture of folk concepts and modern medical concepts which influence preventive and health seeking behavior. Health personnel often believe in these popular concepts. Dehydration is a new term and concept introduced by the health education campaigns and often mistaken for the term malnutrition. Oral rehydration solution (ORS) is seen as an ineffective drug against diarrhea. The inadequate use of pharmaceuticals is widespread and in most cases they have been prescribed by doctors.

Conclusions: these results show the co-existence of popular and medical concepts, the latter with different interpretations. There is a need for a change in the communication between health services and population, based on an alternative analysis of people's knowledge and behavior.

Key words *Diarrhea, Dehydration, Knowledge, attitudes, practice*

Resumo

Objetivos: analizar os conceitos e estratégias de tratamento da população relativas à diarréia e à desidratação e suas implicações para melhorar a prática dos serviços de saúde.

Métodos: foram realizadas entrevistas individuais e de grupo a mães, outros membros da comunidade, curandeiros tradicionais e pessoal básico de saúde em dois municípios da Nicarágua. Realizou-se uma pesquisa domiciliar, com questionário estruturado, em uma amostra aleatória de 1.924 famílias com crianças abaixo de cinco anos em três Departamentos.

Resultados: a população identifica facilmente a diarréia, como doença em si mesma ou como sintoma de outras doenças populares. A construção popular das causas da diarréia é complexa, combina conceitos populares e médicos modernos, e influencia as condutas preventivas e curativas. O pessoal de saúde compartilha conceitos populares de doença. Desidratação, termo e conceito novos introduzidos pelas campanhas de educação em saúde, é confundido com o termo desnutrição. O soro de reidratação oral (SRO) é considerado como um fármaco inefetivo contra a diarréia. A utilização inadequada de fármacos está muito disseminada sendo estes, na maioria dos casos, prescritos pelos médicos.

Conclusões: os resultados indicam a convivência de conceitos populares com conceitos médicos modernos nem sempre bem desenvolvidos. É necessária uma mudança na comunicação entre os serviços de saúde e a população, baseada numa análise diferente dos conhecimentos e práticas da população.

Palavras-chave *Diarréia, Desidratação, Conhecimentos atitudes e prática*

Introduction

Diarrheal diseases, acute respiratory infections and malnutrition are the leading causes of high mortality and morbidity rates in under-fives in many developing countries. Diarrhea is estimated to be the cause of 12-19% of worldwide deaths in under-fives.[1,2] In Nicaragua also diarrhea occupies a foremost position among the causes of morbidity and mortality in young children and continues to be one of the health problems prioritised by the Ministry of Health.[3,4]

Important elements of the diarrheal control programmes to reduce diarrhea mortality are the adequate administration of fluids at home and resorting to health services when symptoms of severity appear.[5] In addition, to achieve a reduction in diarrhea morbidity rates, the emphasis should be placed on preventive measures. Thus, the control programmes must include a strong health education component.[6]

The introduction of oral rehydration therapy (ORT) contributed to a decrease in under-fives mortality caused by dehydration.[7] However, despite the ORT promotion campaigns carried out during the last decades, several studies have shown that its use is frequently incorrect.[8-10] It was also observed that people who had already used ORT were less likely to use it again for various reasons such as, the perception that it was ineffective in the treatment of diarrhea, or its contradictions with the beliefs related to this syndrome.[6]

Research into people's knowledge, as well as into popular preventive and health seeking behaviour, is recognised to be necessary for a better design and implementation of health promotion campaigns.[11,12] The process of promoting health has to be initiated by an analysis of the popular causative constructions related to ill-health, which do not always correspond to the logic of formal medicine.

This study tries to contribute to a better understanding of diarrhea and dehydration, affecting young children in Nicaragua. The objective of this paper is to analyse people's knowledge and practices relating to diarrhea and to use the results of this analysis to argue for a different way of communication between health services and the population in order to improve the effectiveness of health education programmes. We will present our findings on a) people's knowledge on diarrhea and dehydration, and b) people's health seeking behavior in relation to diarrhea. On the basis of these results, we will discuss similarities and contradictions of the popular and allopathic or "formal" medicine, the influences of the health education campaigns and make some suggestions for a more useful and applicable analysis of this kind of research for the general population, as well as for health personnel.

We use the term popular medicine as opposed to traditional medicine because the dichotomy of traditional versus allopathic medicine assumes that "traditional" medical cultures have more in common with each other than with modern medicine. We found that a more accurate label is "popular medicine", which accounts for urban-rural cultural syncretism and embraces the dynamic of the subaltern cultures to respond to new events and challenges. It is characterised by the integration of various medical systems ranging from outdated/updated allopathic medicine and other medical traditions associated with the main cultural foundations of Latin America such as European-African-Indian.

Methods

In order to identify the knowledge and practices of the population relating to diarrhea and dehydration, a qualitative study in two municipalities (Ocotal and Estelí) and a household interview survey in the departments were carried out.

Study area

The area of study is composed of three Departments, Estelí, Madriz and Nueva Segovia, located in the North of the Central Region of Nicaragua, close to the border with Honduras. It has an area of 8,017km^2 which represents 6,2% of the national territory. The total population is estimated to be 430.953 inhabitants,[13] from which 43,6% live in urban areas (> 2.000 inhabitants) and 56,4% in rural areas (< 2.000 inhabitants). Almost half of this population (45,2%) are children (< 15 years of age). The economy of the region is based on agriculture and cattle raising. Most of the labour force concentrates on agro export crops (coffee and tobacco) and basic crops for home-consumption (rice, corn, beans). The economically active population represents 32% of the region's total population.

Qualitative study

Qualitative research methods were applied to obtain a better understanding of people's knowledge, perceptions and practices relating to diarrhea and dehydration and on the behaviour of health staff related to the disease under study. In-depth individual and group interviews were carried out throughout the year by the research team as well as by the supervi-

sors. In order to guarantee the quality of the data, different methods were used at different times and the data analysis was conducted by different researchers.

Semi-structured interviews
Interviews with a topic guide were conducted with women from rural and urban areas, traditional health personnel, healers and birth attendants, community members and mothers of children who were in hospital due to a diarrheal episode. The informants were chosen in a purposive way. The topic guide was about the causes of diarrhea, types of treatment, symptoms, severity signs, preventive measures and the usefulness of oral rehydration solution (ORS). They were also asked about folk diseases related to diarrhea such as evil eye (ojo), indigestion (empacho), colerín, movements (movimiento).

Group interviews.
Interviews of mothers' groups were carried out using the same topic guide, as in the individual interviews. There were from 11 to 14 women who participated in each group. The interviewees came from the rural area of Ocotal and did not know each other previously. The discussions were recorded and then transcribed for the analysis. Simultaneously with the discussion notes were taken. Each group interview lasted 30 to 45 minutes.

Household interview survey

Questionnaire. The questionnaire design was based on an interview survey on diarrhea carried out in slum areas of São Paulo, Brazil.[14] After several pretests the final questionnaire included questions on socio-economic characteristics (age, sex, literacy, scholarship, occupation, domestic appliances), breastfeeding practices, knowledge and practices of diarrhea and dehydration. We used closed questions, i.e., with a precoded answer, to ask about behaviour (for example, "Did you consult somebody to treat the child?") and open questions, to find out about knowledge and opinions (for example, "Why, in your opinion, do children get diarrhea?").

Sampling. A representative sample of families in the region with children under the age of five was interviewed. Only the municipalities of Murra and Quilalí were not included, due to the fact that they were at the time (1990) in an area of war. The total number of households of the region was 58.742, in 830 rural and urban communities. A two-stage stratified random sample was selected, proportional to the population size. The study unit was the household. The final sample size was 1.924 households, (the sample size calculations were made on the basis of a previous experience)[14] 917 in rural areas and 1.007 in urban areas, representing 3% of all households.

Interviewers. The interviews were carried out by people from the local communities. Such interviewers have the advantages of a good knowledge of the community or neighbourhood, they can move easily and develop a confident relationship with the interviewees. The interviewers were selected from non-health personnel, in order to avoid bias towards polite answers related to the use/non-use of health services and the induction of formal answers on the knowledge of diarrhea and dehydration. Most of the interviewers were female school teachers. The selected interviewers received a short but intensive training, over a period of two days, including three test interviews. Each interviewer carried out only 10 to 20 interviews to avoid bias due to routinization and fatigue, as well as personal bias.

Quality of the data. The central team trained three field researchers and five health workers as supervisors (i.e. 10-15 interviewers to one supervisor). The aim of involving health personnel in the survey was to improve communication with the community and to improve their understanding of people's perceptions of their health situation, knowledge and practices. They were also involved in the qualitative study in order to integrate the research findings into the educational process following the first phase of the investigation, which helped to build up their respect for people's way of thinking and acting. 18,2% of the interviews (350 questionnaires) were repeated by the supervisors. As in all our surveys carried out by local interviewers, we found a good internal consistency in the answers[15-17] and no cases of falsification. The data were double entered into a computerized database using a PC database software and analysed in a macro-computer. The statistical significance was established by means of the Pearson χ^2 test and the proportion differences, considering significant $p < 0,05$).

Results

Socio-economic data

Although our sample consisted only of families with children under-five, the population structure was very similar to the estimated regional and national population structure. Almost half of the total population was under fifteen. 51,4% of the population in rural areas and 54,4% in urban areas was female.

The socio-economic indicators used were literacy, scholarship, occupation, kind of water supply and sanitation, and the presence of domestic appliances; they all showed low socio-economic levels.

Although only 17% of the interviewees in urban areas and 32,2% of the interviewees in rural areas declared that they were illiterate, half of the population can be considered as functionally illiterate as they did not pass the fourth year of primary school.[18] Most men in the rural areas (83,6%) and one third in urban areas (33,6%) worked in agriculture. Most women in rural (83,9%) and urban (62,7%) areas were housewives.

Half of the houses of the whole region had between three and four rooms, with a mean of 2,2 people per room in rural areas and 1,6 in urban areas. The number of family members, 6,7 people in rural and 6,4 people in urban areas, was higher than in other studies in Latin America.[19]

Access to a water supply was poor in rural areas (156% of the households) and good in urban areas (73,9%). On the other hand, the sewerage system was poor in both areas, covering one third of the population in urban areas and only 3,9% in rural areas. 62,9% of the urban population and 53,3% in the rural area had latrines.

In the rural area, only half of the families had a radio and one third a horse or a mule. In the urban area, 67,0% of the households had a radio and one third a television as well.

There was good geographical accessibility to the public health services: in rural areas, within an hour and a quarter 70% of the population can reach a health post, about 50% a health centre and 30% a hospital. In the urban areas 90,0% of the population can reach a health post in less than three quarters of an hour, 86,6% a health centre in less than an hour and almost 80,0% a hospital in less than an hour and a half.

Diarrhea

Local terms for diarrhea

All informants in the qualitative study knew and used the term diarrhea. There were also a variety of popular expressions which were related to: faeces consistency ("obra churre", the bowel movements are loose; "le pega llorazón en la barriga", its belly cries; "como si fuera agua", as if it were water), frequency of depositions ("obra exigido" he/she has demanding defecations, "obra seguido" he/she defecates continuously; "ensucia más de lo necesario", he/she dirties more than necessary) or to the causes ("le pega maleza en el estómago", his/her stomach becomes ill, "se le afloja el estómago", the stomach is loose, "tiene empacho", "le dió ojo", "pujo", "humor").

People's definition of diarrhea

All interviewees in the qualitative study could identify a diarrhea episode. In the household survey, more than half of the interviewees (59,6% in rural area and 57,8% in urban areas) defined diarrhea as the increase in the frequency of depositions ("cuando obra exigido", demanding defecations; "obra seguido", continuous stools; "obra demasiado" excessive defecations; "va varias veces a hacer lo necesario", he/she goes several times to do the necessary). The second most frequently mentioned characteristic was faeces consistency ("obra churre" loose stools, "le pega llorazón en la barriga", stomach cries; "como si fuera agua" as if it were water, "obra ralo" he/she defecates liquid, "obra como chingaste", "chingastoso" defecates with a gritty element). The frequency of the answers in relation to the consistency was lower in the rural areas (23,8%) than in urban areas (42,4%), the difference being statistically significant ($p < 0,001$).

Causes of diarrhea

A number of causes of diarrhea were indicated by the informants. In the household survey, half of the answers from both areas mentioned aspects related to general hygiene, "por la suciedad" (because of dirtiness), "falta de higiene" (lack of hygiene), (Table 1) "por las moscas" (because of the flies), "las pachas sucias", (dirty baby bottles), "manos sucias" (dirty hands). In the household survey there was a low percentage of answers relating diarrhea to folk diseases (ojo, calor, etc.), however, when discussing this in the in-depth interviews during the qualitative study we came up with a more complex classification of the perceived causes of diarrhea (Box 1).

Table 1

Distribution of answers on the different causes of diarrhea in the household survey (respondents could give up to three answers), by geographical area. Region I, Nicaragua, 1990.

Causes of diarrhea	Rural		Urban	
	n	%	n	%
Lack of general hygiene	571	47,1	716	51,3
Related to food	237	19,5	286	20,5
Parasites	142	11,7	138	9,9
Water hygiene	63	5,2	54	3,9
Folk diseases	65	5,3	43	3,1
Infection	42	3,5	85	6,1
Do not know	75	6,2	44	3,2
Other answers*	18	1,5	28	2,0
Total	1.213	100,0	1.394	100,0

* Teeth, weakness, poverty, not going to the health facility

Box 1

Classification of the perceived causes of diarrhea mentioned in the qualitative interviews. Region I, Nicaragua, 1990.

1. Diarrhea related to particular food or feeding habits
   - In breast-fed children: due to spoiled milk
   - Non-breast-fed children and adults: food disease (mal de comida)
2. Diarrhea due to infection
3. Diarrhea due to parasites
4. Diarrhea due to intake of pharmaceuticals
5. Diarrhea due to the hot climate
6. Folk diseases accompanied by diarrhea
   - Empacho
   - Ojo (evil eye)
   - Humor or heat
   - Pujo
   - Colerín

Popular etiological concepts of diarrhea, prevention and treatment

In the in-depth individual and group interviews people mentioned the following types of diarrhea:

Diarrhea in breastfed children. Breastfed children may suffer from diarrhea, which is due to spoiled breast milk and has different causes: breaking of dietary restrictions by the mother (for instance eating cabbage or avocado); exercise or heat (when the mother has been doing work and sweating or has been exposed to the sun, her milk is "agitated" and if breastfed, the child will get diarrhea, because the heat "spoils the milk"); not feeding on time ("leche rezagada", late milk); strong emotion or sadness; the mother is pregnant and still breastfeeds, (the child will develop *cipe* i.e. strong diarrhea through which

the child becomes "dry, thin, crying and loses the appetite").

To prevent these types of diarrhea, the mother should throw away the spoiled milk. If the child has already drunk spoiled milk and has got diarrhea, breastfeeding should be stopped until the diarrhea is over and he/she is given a purgative to "clean the stomach". Some people recommended breast milk boiled with salt and cumin as a laxative. One informant said that the mother has to take the laxative which will reach the child through the breast milk. When the child develops *cipe*, breastfeeding must be interrupted and substituted by another type of milk.

Diarrhea due to particular food or feeding practices (mal de comida). In children that are on solids and in adults, this condition can be caused by certain types of food (fatty food, beans, milk, dry/hard food), inadequate food preparation ("the food remains raw", "the food is badly prepared"), when the usual timetable for the meal is not respected ("the stomach is passed because one does not eat in time"), the amount of eaten food ("one eats too much"), the hot/cold imbalance due to food intake ("cold foods", "when one arrives agitated (sweating) and eats a banana, which is "cold").

Diarrhea due to parasites. This diarrhea is usually easily recognised, because it refers to visible parasites (lombrices) such as Ascaris present in vomit or faeces. Some people mentioned amoebas. According to our informants the parasites originate from the earth that children eat, from water, food and from flies. Eating too many sweets may cause parasites. Children with parasites in their stomach sleep with their eyes open, grind their teeth and drool. They are pale and have rings under their eyes, they eat but do not gain weight. They develop a big belly ("tienen la barriga aventada", "están panzoncitos"); they may have headaches, loss of appetite and become tired. Their back, sides and head are hot, their hands and feet are cold; their faeces is a yellow-green, foul-smelling, liquid, containing gritty elements (chingastosa), and sometimes also blood and pus ("because the parasites know how to bite the intestine"). The parasites become exacerbated by the full moon ("by the full moon the worms (lombrices) move around, to calm them down one has to use a necklace of garlic"). To expel the worms "apazote" is used. Garlic, rubbed on the stomach or as necklace, is useful for calming down the worms.

Diarrhea due to infection. Infection is a medical term, taken and adapted by the people. According to some informants, diarrhea due to infection is also called "de desgaste" (wasting), "intestinal" and "de retorcijón" (colic stomach pains). Most of the informants could not define the cause of this diarrhea. Some attributed it to drinking unboiled water (agua cruda), mother's lack of care (descuido). Some informants related it to some types of food. Defecation is accompanied by pain (retorcijón). Faeces present blood and mucus, with gritty elements (chingastosa) and can contain pieces of food, because the food is not properly digested. Diarrhea due to infection is perceived as being severe. Often it is accompanied by vomiting, fever and aching bones. Children lose weight and become very weak ("they fall down because of weakness"). The child is uneasy, thirsty and "the fontanel springs" ("le brinca la mollera"), the stomach is distended ("empanzados") and hot. To calm the infection acid fruit juices, rice water with ice, coagulated milk and bananas (guineos) should be given.

Diarrhea due to pharmaceuticals. There are some pharmaceuticals recognised as being "hot" which can cause diarrhea. This is the case with antibiotics ("combióticos"). To treat this diarrhea large quantities of acid fruit juices (lemon or orange) should be given.

Diarrhea due to the heat (climate). When the climate is very hot or a child does not drink enough fluids due to the lack of attention from the mother, the stomach becomes dry and develops diarrhea. Faeces are foaming, foul-smelling, yellow and with blood traces. It lasts usually only one day. Pharmaceuticals do not help to treat this syndrome. Some people use lemon juice with salt and guava infusions. Some informants recommended giving the child a cold water bath.

Folk diseases accompanied by diarrhea

People identified several conditions, which appeared together with diarrhea, as independent nosological entities:

Empacho (indigestion). This condition is caused by eating large quantities of the same food, without change, or eating dry and hard food without a drink, or having uncooked meals. The food gets stuck (se pega) to the wall of the stomach and rots. Empacho is not always accompanied by diarrhea. When diarrhea is present, faeces are "chingastosas", foul-smelling and green. The child loses its appetite, does not drink and vomits. They get sick from looking at the food which caused the condition and will never eat it again. Diagnosis is confirmed when small "nodes" are found behind the ears, or on the hands (between the thumb and index finger and on the wrists). The treatment is undertaken by empacho specialists called sobadores. These sobadores may be healers, midwives or simply an empacho specialist.

The treatment consists of a massage with an oil or ointment. Wrists, back, sides of the stomach, soles of the feet and the face are given a massage without touching the stomach. After the massage a purgative, oil or milk of magnesia is administered "to clean the stomach". Some interviewees assumed that ORS was a laxative. and could be given to treat empacho, others thought that ORS would not help and should not be given, because it does not cure the empacho ("no le llega" it does not reach it).

Ojo (evil eye). It is caused when people having a "strong gaze" (vista fuerte, i.e. a lot of force in their stare), watch the child. Frequently these people themselves suffered from evil eye ("fueron ojeadas") in their childhood. The child becomes sad and weak. Sometimes he/she suffers from headache, cries all the time, and cannot sleep. The stools are green, soft ("molidas y cortadas") and accompanied by vomiting. It can be simple or strong evil eye ("simple o fuerte"). The strong evil eye is more acute, the child becomes very ill in a short time and can die. (Adults can also suffer from evil eye although more rarely). When a person with a strong gaze ("capacidad de ojear") admires the hair of another, this will deteriorate and lose its beauty. A person with strong gaze can stop a snake with a glance or cause the death of a plant. The diagnosis of "ojo" is established when the left eye of the sufferer becomes smaller than the right one. Another diagnostic method mentioned was to "hold an egg in the hand and use it to make the sign of the cross all over the child's body, from head to foot, including the arms. The egg is cracked open and placed under the child's bed. If it is evil eye, the next morning the egg will be white ("cooked")". This is treated by taking mouthfuls of rum ("guaro") and rue (ruda), and spraying it all over the child from head to foot, back and front. Some informants said it was necessary to repeat this ritual three times, on consecutive days. It can be done by the same person who caused ojo or by another person who knows how (who suffered from evil eye during his/her childhood). To prevent evil eye, small children should not be seen (they are covered with a white blanket when going out into the street). Other preventions are wearing red clothes or a "contra" (opposed), usually a bracelet with a seed, which has been prayed over (pulsera rezada), like an amulet.

Humor or heat. Due to the humor or heat emanating from the body of a sweating person the child can become ill. The heat of a person who is drunk ("un bolo") can also be the cause. The child presents a strong diarrhea that does not stop. To cure it the child is wrapped in the shirt of the drunk or sweating person.

Pujo. This condition is also caused by the presence of a drunk or sweating person or a woman in her first pregnancy. The child suffers from frequent but difficult defecations. He makes a big effort to defecate and turns purple ("hasta que se pone morado"). The stools are small, frequent and soft. The person who has caused the condition has to spit on the child's navel. If the person was drunk, he has to hug the child or wrap him/her in his/her sweaty shirt. To prevent pujo, the child should wear a bracelet with the hair of a woman in her first pregnancy.

Colerin. Due to eating pork from a pig which was enraged ("con la cólera del animal"). One informant said that colerin is transmitted by the air and, sometimes, whole villages die of it ("pueblos enteros tenían que ser enterrados"). The child presents high fever, vomiting, diarrhea, stiffness and convulsions, and does not eat or drink. When the diarrhea is over the clothes must be burnt.

Movimiento (movement). This condition is recognised by the increase of stools of soft consistency, presented by children when beginning to crawl. It is not perceived as an illness, but as a natural condition. It lasts three days and does not need any treatment.

Popular treatments of diarrhea

The most frequent answers on diarrhea treatment in the household survey were: a) to resort to the health service (38% of the answers in rural area and 46,4% of the answers in urban area), b) home treatment (30,8% of the answers in rural areas and 18,7% of the answers in urban areas) and c) pharmaceuticals (16,6% of the answers in both areas).

The large variety of home treatments elicited by our qualitative studies has been mentioned in the previous sections. Additional treatment strategies included the following: Medicinal plants (camomile, guava in leaves, bark and buds; hibiscus roots, white leaves, its leaves and buds; *granate*, sago starch, *achote*, *guásimo*, cinnamon). Purgatives (magnesia milk, some types of oil) are used when the diarrhea is due to food. The pharmaceutical substances most frequently mentioned by our informants were antibiotics (tetracycline, terramycine, ampicilin, trimetropin), antiparasites (mebendazol and metronidazol), and Alka-Seltzer® with lemon. Acid or cold fruits (orange, lemon) juices are used to counteract the heat caused by the diarrhea.

Prevention of diarrhea

In the household survey, about one third of the answers (36,0% in rural areas and 37,4% in urban areas) regarding diarrhea prevention mentioned gener-

al and food hygiene (29,2% in rural areas and 31,1% in urban areas).

According to the informants in our qualitative study, to prevent diarrhea means that the causes should be avoided. Therefore, it is very important to be careful with feeding practices, such as giving food at the right time, and preparing clean and well cooked meals. To avoid diarrhea due to evil eye, pujo or calor, specific precautions should be taken as described above. To avoid parasites, children should not eat earth, or too manys sweets which are believed to create worms. Hygienic measures (as recommended in the health education campaigns) were also mentioned, such as making sure that children do not put dirty objects into their mouth, covering food and avoiding flies settling on bottles and food.

Popular diagnosis of severe diarrhea

The signs of severity most frequently mentioned in the household survey were the liquid consistency and frequency of stools (Table 2). Loss of weight and other general non-specific symptoms such as "can't sleep", "bored", "sad", "loss of appetite", "doesn't want to play", "old looking" were also reported. Some people found it difficult to define signs showing how serious a diarrhea episode is. A number of answers, less in the urban area, said diarrhea was severe because "the child becomes severely ill" or "is at death's door", "because some of my children died of it". These could also indicate the question was not clear enough. Dehydration signs were only mentioned in a small percentage (8,5% in rural areas and 7,8% in urban areas).

Table 2

Distribution of answers on diarrhea severity signs (up to three answers per respondent) in rural and urban areas. Region I, Nicaragua, 1990.

Severity signs	Rural		Urban	
	n	%	n	%
Frequency of stools and aspects (colour, consist.) of faeces	399	33,5	561	41,1
Loss of weight/appetite	216	18,1	192	14,1
General changes	130	10,9	93	6,8
Dehydration signs	101	8,5	107	7,8
Duration	60	5,0	98	7,2
Becomes dehydrated*	84	7,1	130	9,5
Do not know	99	8,3	58	4,3
Vomiting, fever	53	4,5	90	6,6
Becomes severely ill	49	4,1	36	2,6
Total	1.191	100,0	1.365	100,0

* We considered "they dehydrate" as a separate answer, because it is not clear if the concept is understood or it is only a repetition of the medical term.

Dehydration

People's definition of dehydration

In our survey in rural areas, loss of weight was the symptom most frequently mentioned for dehydration "está demasiado dejadito de los huesos" (he is all skin and bone), "when we feed them and they do not gain weight", "cuando uno lo controla y sale bajo de peso" (when one goes to the weight and growth monitoring and the child has a low weight). 33,5% of the interviewees mentioned at least one sign of dehydration. In urban areas, however, half of the interviewees described at least one sign of dehydration (50,4%, $p < 0,001$). Even here, loss of weight was the second most frequently mentioned symptom (Table 3). The percentage of families who declared not to know what dehydration was, was higher in rural (17%) than in urban areas (7,3%; $p < 0,001$).

Table 3

Dehydration signs described by the interviewees by geographical area. Region I, Nicaragua, January 1990.

Dehydration signs	**Rural** (N=917)		**Urban** (N=1.007)		p
	n	%	n	%	
Thin, loss of weight	412	44,9	401	39,8	< 0,05
Dehydration signs	308	33,5	508	50,4	< 0,001
Non-specific general symptoms	182	19,8	161	16,0	< 0,05
Diarrhea	64	6,9	68	6,7	< 0,05
Malnourished	15	1,6	21	2,0	> 0,05
Other	58	6,3	84	8,3	> 0,05
Do not know	160	17,0	98	7,3	< 0,001
Total	1.199	100,0	1.341	100,0	

N = Total of interviewed households, n = number of answers; % relative to N

Mollera caida (sunken fontanel). A symptom of advanced dehydration in infants, was traditionally identified as a disease in itself, and not related to diarrhea or dehydration; it required a specific treatment. The causes of mollera caida as reported by our informants in the qualitative study were: receiving a blow due to a fall from the bed or table; sudden movements when adults play with children throwing and catching them; cold ("the ice that one takes can cause mollera caida, so frequent baths can cause it"); fright, susto, by too rapid removal from the breast, and as a consequence of malnutrition in very young children. Mollera caida is supposed to have a physical cause, therefore it requires physical treatments. Some treatments employed were sucking out the fontanel, slapping the soles of the feet when holding the child upside down, pushing the roof of the mouth upwards with the finger wrapped in cotton, massage on the fontanel, (see painting) if it is due to cold, placing warm clothes on it. The treatment is carried out by healers or people who have the necessary knowledge ("specialists").

Treatment of dehydration

When asking about the treatment of dehydration in our household survey, in rural areas the most frequent answer (36,8%) was "to consult the health services" and only 26,5% oral rehydration. In urban areas, oral rehydration was mentioned most frequently (40,9%) as treatment for dehydration. (The difference is statistically significant , $p < 0,01$). 19,5% of the answers in rural areas and 16,7% in urban areas referred to improvements in the quality and quantity of food ("alimentarlo bien"; "give him/her more food", "to begin with giving him/her more food containing vitamins"). The difference was not statistically significant.

Prevention of dehydration

The prevention of dehydration is not well known by the population, particularly in rural areas. Despite the emphasis of the health education campaigns on dehydration, only one third of the answers relating to the prevention of dehydration in rural areas (30,6%) and half in urban areas (51,8%) were correct ($p < 0,001$). About a quarter of the interviewees (26,6% in rural area and 22,1% in urban areas mentioned the improvement in quality and quantity of food as a means of preventing dehydration.

People's opinion on the utility of ORS

In our qualitative study we could identify a negative attitude towards the use of ORS. The most frequent reason was that ORS "does not cut (stop) diarrhea". Some people reported having seen mothers leaving the health post and throwing away the ORS sachets. Other people said they would only use ORS in the case of severe diarrhea. Generally it was recognised that though it does no damage, ORS does not help in the case of diarrhea related to folk diseases (evil eye, empacho, etc.). 27,0% of the families in rural areas and 42,4% in urban areas mentioned that the use of ORS helps to prevent dehydration. Nevertheless, only 22,2% of the families in rural areas and 26.8% in urban areas ($p < 0,01$) could explain how ORS

works. A small percentage of the answers reflected a popular explanation of the use of ORS. Some people were of the opinion that ORS cools the stomach, therefore it can be used in the same way as acid or cold liquids. Others thought ORS acts as a purgative and can be used for diarrhea related to food intake problems.

Health-seeking behaviour in case of diarrhea

When a child suffers an episode of diarrhea the caretaker, usually the mother or grandmother, identifies the cause and behaves accordingly. However, depending on how the diarrhea progresses, the attributed cause could change and therefore the treatment would also change. At the beginning of a diarrhea episode, usually home treatment is given, often in the form of a mixture of plants and pharmaceuticals; if the child does not recover or the diarrhea is perceived as being severe, the mother will seek help at the health centre. If the cause is thought to be ojo or empacho, a traditional healer will be sought. Sometimes it is thought that the child presents different symptoms due to different causes, for instance evil eye with fever. In this case, in urban areas, the paediatrician will be consulted to treat the fever and a traditional healer to deal with evil eye. This behaviour was also referred by the health personnel, regarding their own children. Some young mothers attributed the use of home treatments to their own mothers or other elder and experienced people. Half of the children with diarrhea episodes in the two weeks preceding the household survey were brought to the health service (53,9% in rural areas and 59,9% in urban areas).

Use of pharmaceuticals in case of diarrhea

According to the household survey a high proportion of diarrhea cases were treated with pharmaceuticals prescribed by the health services or were self-prescribed: 60% of the 817 children with diarrhea within the two weeks preceding the survey received at least one pharmaceutical. Antibiotics were the most frequently used among them, trimetropim-sulfametoxazol and ampicillin (Table 4). 60% of the pharmaceuticals were prescribed or given by the health facility (health post, health centre or hospital), between one third and one fifth were left-overs from previous episodes of diarrhea or were obtained without medical prescription.

Table 4

Distribution of the pharmaceuticals used for the treatment of diarrhea cases in the two weeks preceding the survey by geographical area. Region I, Nicaragua, 1990.

Pharmaceuticals taken	Rural		Urban	
	n	%	n	%
Antibiotics	167	45,7	169	41,5
Antiparasitarian	85	23,2	111	27,3
Antidiarrheals	29	7,9	32	7,9
Other	52	14,2	70	17,2
Do not know	33	9,0	25	6,1
Total	366	100,0	407	100,0

Use of ORS

In our questionnaire, a closed question (with yes/no answer) on the use of ORS for the diarrhea episodes within the two weeks prior to the survey was included. 34,8% of the 465 cases of diarrhea in rural areas and 41,6% of the 377 in urban areas reported to having used ORS. Nevertheless, in the open question on drugs used during the episode, only 14,4% in rural areas and 20,8% in urban areas reported the use of ORS. This difference can be due to the fact that: a) they did not consider ORS as a drug; b) the real frequency of use was smaller than reported.

In addition, in the open question on the treatment of diarrhea ("what do you do to treat your children's diarrhea?") , there was only a small number of answers mentioning ORS.

Feeding practices during episodes of diarrhea

More than half of the mothers with children affected by diarrhea in the two weeks proceeding the household survey (68,4% in rural areas and 60,3% in urban areas) did not modify their feeding practices. In the cases where there was a change, the food given was considered to be easier to digest (such as rice, egg, milk, fresh cheese and soup).

Only in 5,1% of the cases in rural areas and 4,4% in urban areas a change to a liquid diet, based on rice water and corn flour gruel, was reported. In 43,5% of the cases of both areas, children were reported to eat less than usual during the diarrhea episode. The rest received the same amount of food. Of 6,8% of cases in rural areas and 9,4% in urban areas, the mother stopped breastfeeding during the episode of diarrhea. Reasons for this were that the children did not want to drink or had vomited.

Discussion and Conclusions

This study used a combination of qualitative and quantitative research techniques. Both methods provided different but complementary information, building up a better representation of the reality. The richness of diarrhea related folk concepts could only be elicited through qualitative methods. The household survey was not an appropriate tool for obtaining information on subjects considered as socially unacceptable, such as the traditional or folk medical concepts. Only a small percentage of the interviewees mentioned ojo, empacho, calor as causes of diarrhea, and when asked about prevention they mentioned only dietetic or hygienic measures. On the other hand, the exclusive use of qualitative methods would not allow to determine the extent to which the information provided by the health education activities, or the interaction with health services, has occurred and been interpreted by the general population.

The participation of health educators as supervisors in the household survey and as interviewers in the qualitative study contributed to changing their attitude towards popular knowledge, as well as helping to promote an interest and respectful attitude towards people's belief systems. This change was reflected by them beginning to speak freely about their own behaviour in respect of disease, and to respect other people's behaviour and knowledge even if different from that of the formal health system and they started to address questions related to popular knowledge rather than avoiding or ignoring them. A similar experience was described by Aubel and Mansour.[20]

People can easily identify diarrhea, which is recognised as a disease in itself or sometimes as a symptom of one of the several folk diseases (evil eye, empacho, pujo, etc.). The term "diarrhea" is well known and widely used. The results on traditional concepts related to types and causes of diarrhea were similar to other studies carried out in Nicaragua[21] or other Latin American countries.[14,22,23] There were some differences reported in other studies. In Nicaragua for instance, different names for folk diseases that cause diarrhea. These differences are probably due to the fact that the studies took place in other areas of the country.[8,24,25] The health education campaigns undertaken by the Ministry of Health had obviously an impact on people's disease concepts; they frequently mentioned lack of hygiene, presence of flies and uncovered food as causes of diarrhea. This differs from other studies carried out in Latin America where, for instance, hygiene problems are rarely mentioned as a cause of diarrhea.[14,22] We can conclude that traditional concepts of diarrhea persist along with the new information provided by the health education campaigns.

Related to its different causes, there were also a variety of concepts about the prevention of diarrhea. However, we did not find the view that diarrhea prevention is impossible (as reported by others),[14] which again seems to be a consequence of the intensive health education campaigns. Dehydration, as a consequence of diarrhea, is a medical term recently introduced through the health education campaigns in Nicaragua Thus, it is not always well understood and often not related to diarrhea, but to the loss of weight or malnutrition. This could be due to its linguistic similarity (malnutrition = desnutrición in Spanish; dehydration = deshidratación). It reflects how difficult it is for the population to understand and assimilate new words when they are not accompanied by explanations of their meaning. Likewise the knowledge of ORS was limited. Sunken fontanel (*mollera caída*) was traditionally identified as an independent condition and not related to diarrhea.[8,24]

Children's diarrhea, except when considered "movimiento", is perceived as a health problem by the caretakers, and will ensure its treatment at home or in the health service. When the mother receives ORS at the health post, and ORS does not lead to the expected result of stopping diarrhea, mothers are dis-

appointed and do not use it back at home. Thus oral rehydration therapy does not address a perceived health problem.[16,26] Moreover, the information caretakers are given, places emphasis on how to use ORS and not on how it works and on its effects. As people use herbal infusions and fruit juices and the fact that the administration of greater amount of fluids is enough to prevent dehydration,[5] we can conclude that in order to increase the number of cases where dehydration is effectively prevented, much more emphasis should be placed on the explanation of what dehydration is and why fluid intake is so important in the treatment of diarrhea.

In our survey, we found statistically significant differences between rural and urban areas in people's knowledge regarding diarrhea definition, signs and treatment of dehydration, which are contents of the health education campaigns. The difference was probably due to the lower exposure of people to the campaigns in rural areas. Nevertheless, no statistically significant differences between both areas could be observed neither in knowledge of causes and treatments of diarrhea, nor in behaviour the in case of diarrhea. This is consistent with the persistence of traditional concepts in both areas and the search for a cure according to the perceived cause, severity of the diarrheal episode, and treatment options available.

Most of the pharmaceuticals used were inappropriate and they were prescribed in the health facility or bought from the pharmacy. This contradicts health education messages that claim that no drug treatment is necessary and seems to indicate that the health personnel do not know how to correctly manage diarrhea (as was also shown by other studies)[9,27-29] and thus they influence people's knowledge and practices in an inadequate way. Pharmacists or non professional drug sellers have economic interests to sell many and expensive medicines and the personnel working in pharmacies usually lack any kind of medical training.[30] Health staff, however, often feel the need to respond to people's expectations, assuming they want to receive prescriptions.[28,30] Some of them may perceive the use of antibiotics as a way of preventing complications, considering the bad nutritional status of many children.[31] In order to reduce the consumption of unnecessary pharmaceuticals during diarrhea episodes, campaigns should be addressed not only at the general public but also to doctors, health personnel and pharmacists. Also the regulation of the pharmaceuticals market should be a matter for consideration.

People's concepts of the causes of diarrhea will influence both curative and preventive behaviour. This is particularly the case when folk diseases are considered to be the cause of diarrhea, or the different causes are identified (types of food, spoiled breast milk, etc.). In our household survey, the main reason for home treatment (i.e. not resorting to the health facilities) was that it was not thought to be necessary. In rural areas the other main reasons were: long distance, frequent absence of health personnel and lack of money to buy prescribed pharmaceuticals. Only a small percentage of caretakers said they had visited a traditional healer. This may be due to the following reasons: a) the formal household survey is not a sensitive instrument for getting this information; b) the person who cures job or macho is not always a traditional healer, but "specialists" on this kind of syndrome; c) knowledge of traditional medicine is widespread, therefore it is not always necessary to resort to other people, and treatment can be carried out at home.

Medical anthropologists, social scientists, health educators, social psychologists, have been trying to decipher how people in different cultures and social groups explain the causes of ill-health, the types of treatments they believe in, and to whom they turn if they do become ill. They are also concerned with how these beliefs and practices relate to biological and psychological changes in the human organism, in both health and disease. These disciplinary approaches have informed many of the health education programmes in the last decades, assuming that only by knowing individuals, their conceptual and explanatory models of ill health, and their living circumstances it is possible to take efficient and on-going action in health.[32] However encouraging these developments may be as far as research is concerned, there are still long-standing impediments to translate research outcomes into policy, planning and implementation such as: entrenched medical dominance, antagonistic bureaucratic cultures, an intractable political economy of health and inhibitory professional paradigms. There are, of course wide variations between societies in the way these developments and impediments trade off and balance, which ultimately depend on how such issues as the sharing of knowledge and skills, information access and challenges to power and being recognised and resolved in specific contexts.

The conceptual incompatibility of Western medicine with other nosological systems and cognitive structures, although there are some overlapping, can be mentioned as one of the main barriers to integration and dialogue between technical and lay knowledge or traditional and modern medicine.[33] As noted above, popular theories about ill-health are based on

different grounds other than allopathic medicine however, even based on scientifically incorrect premises, these popular models frequently have an internal logical consistency, which often helps the victim of illness or caretakers to "make sense" of what happened and why.[34] The specialised knowledge of the medical profession creates the basis of prestige and social distance between the expert and the health service user, since lay people by definition, are excluded from the esoteric medical knowledge. The basis of professional knowledge is cognitive rationality whereby the privileged status of the profession is grounded in scientific discipline.[35] This certainty contributes to establishing conflicting and unequal power relationships between the "owners" of the "truth" and those "deprived" of it. This is a phenomenon common to all societies made up of populations with different cultural roots and cognitive systems. This phenomenon does not necessarily lead to the disappearance of popular knowledge but may contribute to the deterioration of people's self-esteem, the overvaluation of the official way of thinking and a lack of communication between health staff and the population.

Official medicine frequently marginalizes popular knowledge and practices relating to health problems. This situation contributes to increasing the gap between the community and formal medicine and leads to a dual behaviour. In Nicaragua it was found that basic health personnel, as well as doctors, both representatives of the official system, were in the middle of the conflict between the traditional and modern medicine. They too, may adopt a dual behaviour: in public life, they develop their work with an absolute respect for scientific procedures, in their private life, however, they may practise a mixture of popular and allopathic medicine and even resort to traditional healers.[36]

People's participation in health and education could be improved if an intercultural dialogue is established and a positive attitude to other forms of knowledge is adopted by the health workers. The first step could be the identification of common points and an open dialogue about the differences. Changes will be initiated by means of reflection and discussion rather than by ignoring or rejecting popular knowledge.

Research on people's health perceptions and practices can contribute to the improvement of communication between health services and community. However, research results should not be used simply to give health messages a more "popular" or "acceptable" aspect[37] as it may cause misunderstandings, (for instance, promoting ORS as a kind of nutrient could be followed by a reduction in the food intake and a deterioration in the nutritional status of the child with diarrhea). Instead, research results about the popular belief system should be analysed in health institutions in order to change the negative attitudes of the health personnel, to improve skills, and to establish better communication and cooperation with the community. Research can be the very first step to open a process of discussion and reflection together with the population involved.

During the last decades, the number of studies on people's knowledge of diarrhea has increased [24-26], [28,38,39] and some of them have pointed out its relevance for the promotion of health.[40-43] Just a few[20,44] however, using a participatory research methodology, seem to have influenced health planners and managers to open a reflection and dialogue between the official and popular logic and to enhance a communication between health personnel and the population.

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